Plug Flow Reactor simulation - Web Labs at www.ReactorLab.net - by Richard K. Herz

This is a dynamic (transient, unsteady-state) simulation of a plug flow reactor (PFR) packed with porous solid catalyst pellets. This type of reactor is usually called a packed bed reactor.

There is an annular heat exchange jacket surrounding the reactor. For simplicity, we specify that the temperature of the heat exchange fluid in the jacket is constant throughout the jacket. Energy may be transferred between the reactor and the heat exchange jacket for non-zero values of the heat exchange coeffient-area parameter UA. For "adiabatic" operation, set UA to zero.

The reaction is A → products. For simplicity, the reaction equilibrium composition is specified to be almost all product under all conditions, i.e., an essentially irreversible reaction. The concentration of reactant A is represented as Ca. Constant fluid density is assumed.

At www.ReactorLab.net, Resources, CRE Notes, see part 13 - intro to PFRs and part 10 - thermal safety. http://reactorlab.net/resources/cre-notes/